Appendix 3. Survey of Researchers on Phase 1 Studies

Uncertainty—Sediment Dynamics

1. Sediment accretion in restored tidal areas are adequate to create and to support emergent tidal habitat ecosystems within the 50-year projected time frame.

1a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	4	36.4%
No	0	0%
Somewhat	4	36.4%
No Opinion	3	27.3%

1b. The usefulness of these studies for managers to make management decisions was:

Excellent	2	18.2%
Very Good	4	36.4%
Good	2	18.2%
Poor	0	0%
Very Poor	0	0%
No Opinion	1	9.1%
Not enough information to form an opinion	2	18.2%

1c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Phase 2 should incorporate the applied studies in phase 1 and adaptively utilize adjust management strategies by incorporating the results of Phase 1, sea level rise, and coordinated management of mud flats, birds, fish and habitat.

The question was answered - there appear to be high rates of accretion in most of the opened ponds. We still don't know if this is at the expense of the mudflats or if supply has been sufficient to prevent the loss of significant mudflats.

More studies needed on sedimentation in other restored ponds (A6, A19, Eden Landing).

Good information on some localized areas, but not in project footprint overall.

I was not involved in sediment accretion studies. FWIW, I feel the projected SLR rates threaten the survival of high marsh habitats in the near term regardless of sedimentation because it is less important due to shallower flooding depths and lower periodicity.

Yes, it appears that sediment is enough to accrete and build tidal marsh.

From the data from the initial ponds, it does seem like the ponds have developed quite quickly. Assuming that sediment concentrations remain high and that the overall sediment inputs into the south bay remain relatively high, I would expect future ponds to continue building rapidly. If future ponds start slowing down that would be an indication that conditions have changed. It also does not appear that there has been substantial/landscape-scale erosion of any other habitats in the south bay.

2. Sediment movement into restored tidal areas significantly reduce habitat area and/or ecological functioning (such as plankton, benthic, fish or bird diversity or abundance in the South Bay.

2a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	3	27.3%
No	1	9.1%
Somewhat	4	36.4%
No Opinion	3	27.3%
	0	0%

2b. The usefulness of these studies for managers to make management decisions was:

Excellent	1	9.1%
Very Good	2	18.2%
Good	3	27.3%
Poor	0	0%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	3	27.3%

2c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Management needs to incorporate long term sea level rise and the reality that marsh habitats might not be able to keep pace.

There was an appropriate scope of work, but there was a lack of funding to complete the work. The SF2 project was off to a great start to answer this question until the funding was lost. Jaffe's work suggests that the big changes are on the channel shoulders and not the mudflats, but it is unknown if the observed changes are a direct result of the restoration project or a natural part of channel evolution in the bay.

I don't think we are far enough along in the restoration to see habitat reductions for most birds. One thing that is happening is we are less able to survey areas that have been restored due to access, so we have less information than before breaching.

This does not seem like the correct way to phrase this question. The better question is if tidal marsh habitats can hold the same diversity and abundance of birds and wildlife that a managed pond could-that is our options.

As above, to date there have not been effects, but I think these effects may not begin to appear until larger areas are restored. So far, the results indicate no major effects.

3. Restoration activities always result in a net decrease in flood hazard.

3a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	4	36.4%
No	0	0%
Somewhat	1	9.1%
No Opinion	6	54.5%

3b. The usefulness of these studies for managers to make management decisions was:

Excellent	3	27.3%
Very Good	0	0%
Good	1	9.1%
Poor	0	0%
Very Poor	0	0%
No Opinion	4	36.4%
Not enough information to form an opinion	3	27.3%

3c. Please elaborate on your responses above, or provide suggestions for Phase 2.

The scope was sufficient, but it is too early to tell if the current amount of scour in Alviso Slough is sufficient for additional flood conveyance.

The studies seem to have answered this question.

Uncertainty—Bird Use of Changing Habitats

4. The habitat value and carrying capacity of South Bay for nesting and foraging migratory and resident birds be maintained or improved relative to current conditions.

4a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	5	45.5%
No	2	18.2%
Somewhat	2	18.2%
No Opinion	2	18.2%

4b. The quality of the scientific studies to address the management questions were:

Excellent	2	18.2%
Very Good	6	54.5%
Good	1	9.1%
Poor	0	0%
Very Poor	0	0%
No Opinion	1	9.1%
Not enough information to form an opinion	1	9.1%

4c. Please elaborate on your responses above, or provide suggestions for Phase 2.

The baseline bird abundances and 10-year synthesis of waterbird counts on the ponds will be a great step forward in this area. More research is needed on food availability.

For the most part our pond surveys are good. Need analysis. We also have done very little on carrying capacity. May need better directed studies on K of specific species or guilds.

This question has not been fully addressed by Phase 1 studies, and there are still several important and unanswered questions. At this point, the research suggests that bird diversity and abundance will not be maintained by conversion of managed ponds to tidal marsh. For example, avocet nest abundance has declined with increase pond conversion. Phase 2 studies need to address bird nest abundance and nest success.

Seems like more data are needed to fully answer this but the data to date is providing more insight into specific habitat-bird species linkages.

5. Shallowly flooded ponds or ponds constructed with islands or furrows provide breeding habitat to support sustainable densities of snowy plovers while providing foraging and roosting habitat for migratory shorebirds.

5a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	3	27.3%
No	0	0%
Somewhat	5	45.5%
No Opinion	3	27.3%

5b. The quality of the scientific studies to address the management questions were:

Excellent	1	9.1%
Very Good	3	27.3%
Good	4	36.4%
Poor	0	0%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	1	9.1%

5c .Please elaborate on your responses above, or provide suggestions for Phase 2.

Reproductive success rates (necessary to assess population stability) could be improved. Plover nesting use of islands is minimal, particularly after the first year of island construction. Shallowly flooded ponds are beneficial for plover foraging but research suggest large portions of exposed habitat are still needed to support a breeding population.

Shallow pond sf2 has been good for foraging shorebirds. Islands have not really performed up to snuff for roosting or nesting, but things look more promising this year.

As with the previous topic, good studies to date, but need more data to fully answer this.

6. Ponds reconfigured and managed to provide target water and salinity levels significantly increase the prey base for, and pond use by waterfowl, shorebirds and phalaropes/grebes compared to existing ponds not managed in this manner.

6a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	4	26.4%
No	1	9.1%
Somewhat	2	18.2%
No Opinion	4	36.4%

6b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	3	27.3%
Good	3	27.3%
Poor	0	0%
Very Poor	0	0%
No Opinion	3	27.3%
Not enough information to form an opinion	2	18.2%

6c. Please elaborate on your responses above, or provide suggestions for Phase 2.

SF2= good. A16, and E12-E13 not yet known. Nothing done for grebes or phalaropes beyond original ISP plan of increasing salinity of A13 and A15. Pond analysis may help answer this better.

7. The creation of large isolated islands in reconfigured ponds maintain numbers (and reproductive success) of terns and other nesting birds in the South Bay, while increasing densities of foraging birds over the long term compared to ponds not managed in this manner.

7a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	5	45.5%
No	1	9.1%
Somewhat	3	27.3%
No Opinion	2	18.2%

7b. The quality of the scientific studies to address the management questions were:

Excellent	2	18%
Very Good	3	27.3%
Good	4	36.4%
Poor	0	0%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	1	9.1%

7c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Long term study is necessary to answer this question.

We now know more about how to build islands for maximum densities and reproductive success of birds, but the islands built to date before this research was known are not being used as much as the Project has hoped. This is still a very important area of research to understand how to design future island nesting habitats and how to maintain the current abundance of nesting birds while converting some areas to tidal marsh. It is clear that some nesting birds, like avocets, are seeing population declines simultaneously while some of the preferred nesting habitats (such as A8) are converted to other habitats.

There is great uncertainty here isn't there?

It is imperative that researchers continue studies in subsequent years, in order to determine the long term trends or impacts of nesting island creation/pond conversion.

See comments for question 6.

8. Pond and panne habitats in restoring tidal habitats provide habitat for significant numbers of foraging and roosting shorebirds and waterfowl over the long term.

8a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	3	27.3%
No	3	27.3%
Somewhat	2	18.2%
No Opinion	3	27.3%

8b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	3	27.3%
Good	2	18.2%
Poor	1	9.1%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	3	27.3%

8c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Monitoring of waterbird abundance and behavior in tidal ponds at low tide could now be used. Could potentially use waterbird pond count data.

See response to see previous questions.

Future habitat and carrying capacity has not been studied.

No data yet on this topic.

9. Ridgway's rails (aka CA clapper rail) and/or other key tidal habitat species respond to variations in tidal marsh habitat quality and what are the habitat factors contributing to that response.

9a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	2	18.2%
No	3	27.3%
Somewhat	1	9.1%
No Opinion	5	45.5%

9b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	2	18.2%
Good	0	0%
Poor	0	0%
Very Poor	0	0%
No Opinion	6	54.5%
Not enough information to form an opinion	3	27.3%

9c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Not much done here.

I was not involved in these studies. But I will note that creating more quality upland transitional habitats, and describing a method for assessing the efficacy of these habitats is an ongoing concern.

Limited focus on mature tidal marshes related directly to project.

10. Increased tidal habitats increase survival, growth and reproduction of native species, especially fish and harbor seals.

10a. Phase 1 studies had the appropriate scope of work to answer the management questions:

1Yes	2	18.2%
No	1	9.1%
Somewhat	2	18.2%
No Opinion	6	54.5%

10b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	1	9.1%
Good	2	18.2%
Poor	1	9.1%
Very Poor	0	0%
No Opinion	4	36.4%
Not enough information to form an opinion	3	27.3%

10c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Extensive study on fish, no data on harbor seals.

No info on seals. Info on fish from abundance/distribution study but not specific to growth/repro.

Seems like there is some good data for fish, but I don't know about harbor seals.

Uncertainty—Mercury

11. Tidal habitat restoration and associated channel scour increase MeHg levels in marsh and bay-associated sentinel species?

11a. Phase 1 studies had the appropriate scope of work to answer the management questions:

Yes	5	45.5%
No	0	0%
Somewhat	0	0%
No Opinion	6	54.5%

11b. The quality of the scientific studies to address the management questions were:

Excellent	5	45.5%
Very Good	1	9.1%
Good	0	0%
Poor	0	0%
Very Poor	0	0%
No Opinion	3	27.3%
Not enough information to form an opinion	2	18.2%

11c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Further research not needed.

12. Pond management increases MeHg levels in ponds and pond-associated sentinel species?

12a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	6	54.5%
No	0	0%
Somewhat	0	0%
No Opinion	5	45.5%

12b. The quality of the scientific studies to address the management questions were:

Excellent	4	36.4%
Very Good	2	18.2%
Good	0	0%
Poor	0	0%
Very Poor	0	0%
No Opinion	3	27.3%
Not enough information to form an opinion	2	18.2%

12c. Please elaborate on your responses above, or provide suggestions for Phase 2.

The research on mercury has clearly shown that pond and tidal marsh management can alter mercury cycling and bioaccumulation, however phase 2 research should focus on 1) how to manage ponds to reduce mercury and 2) what the effects of mercury is on birds. Also, a long-term mercury monitoring program should be established by the South Bay Salt Pond Restoration Project at set sites and indicator species, since it will not be possible to study every management action associated with the Project.

Further studies not needed.

Good data to date on concentrations across a range of species.

Uncertainty—Water Quality

13. The effect of a) pond management, including increased pond flows and associated managed pond effects, and b) increased tidal prism from tidal habitat restoration on water quality, phytoplankton and fish diversity and abundance, and food web dynamics in South Bay.

13a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	2	18.2%
No	0	0%
Somewhat	2	18.2%
No Opinion	7	63.6%

13b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	0	0%
Good	4	36.4%
Poor	0	0%
Very Poor	0	0%
No Opinion	5	45.5%
Not enough information to form an opinion	2	18.2%

13c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Some info also from Takekawa and student research outboard of SF2.

Uncertainty— Invasive and Nuisance Species

14. If not adequately eradicated, invasive Spartina and hybrids significantly reduce aquatic species and shorebird uses.

14a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	1	9.1%
No	2	18.2%
Somewhat	3	27.3%
No Opinion	5	45.5%

14b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	2	18.2%
Good	3	27.3%
Poor	0	0%
Very Poor	0	0%
No Opinion	3	27.3%
Not enough information to form an opinion	3	27.3%

14c. Please elaborate on your responses above, or provide suggestions for Phase 2.

Although eradication efforts have been successful, increasing the resilience of the marsh system at the same that invasive spartina also served as high tide refugia which continues to be missing - efforts should coordinate these type of findings.

Not really SBSP, but ISP program.

This research question has been addressed and we likely do not need additional research on this in Phase 2.

Not funded via phase 1 studies but lots of other work on Spartina. Seems like diminishing returns on control at this point.

15. California gulls, ravens, and crows are adversely affecting (through predation and encroachment on nesting areas) nesting birds in managed ponds.

15a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	5	45.5%
No	1	9.1%
Somewhat	2	18.2%
No Opinion	3	27.3%

15b. The quality of the scientific studies to address the management questions were:

Excellent	3	27.3%
Very Good	4	36.4%
Good	1	9.1%
Poor	0	0%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	1	9.1%

15c. Please elaborate on your responses above, or provide suggestions for Phase 2.

We know that they are adversely affecting nesting birds. What management actions are effective in handling this?

The work on California gulls has been excellent, but the main question of how California gull populations continue to grow is still a mystery. A directed study to directly address California gull reproductive success (nest success and chick growth and survival) and gull movements are still critically needed in any Phase 2 research plan.

Uncertainty—Public Access and Wildlife

16. An increase in boating access significantly affects birds, harbor seals or other target species on short or long timescales.

16a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	1	9.1%
No	2	18.2%
Somewhat	1	9.1%
No Opinion	7	63.6%

16b. The quality of the scientific studies to address the management questions were:

16c. Please elaborate on your responses above, or provide suggestions for Phase 2.

The impact of increased boating is a big unknown for the ecosystem of the South Bay.

No info.

This question has been fully addressed scientifically and we likely don't need addition studies about this is Phase 2.

No projects related to this that I'm aware of.

17. Landside public access significantly affects birds or other target species on short or long timescales.

17a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	4	36.4%
No	0	0%
Somewhat	4	36.4%
No Opinion	3	27.3%

17b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	1	9.1%
Good	7	63.6%
Poor	0	0%
Very Poor	0	0%
No Opinion	2	18.2%
Not enough information to form an opinion	1	9.1%

17c. Please elaborate on your responses above, or provide suggestions for Phase 2.

I thought studies indicated that foot traffic did not seem to impede nesting success? This should be continued to be studied.

Are there effective mitigation measures?

This research question has been addressed and we likely do not need additional research on this in Phase 2.

Studies could and should be expanded to include specific areas of concern for target species.

Good data to date on effects from trails.

18. Public access features provide the recreation and access experiences visitors and the public want over short or long timescales.

18a. Phase 1 studies had the appropriate scope of work to answer the management questions.

Yes	3	27.3%
No	0	0%
Somewhat	2	18.2%
No Opinion	6	54.5%

18b. The quality of the scientific studies to address the management questions were:

Excellent	0	0%
Very Good	0	0%
Good	4	36.4%
Poor	0	0%
Very Poor	0	0%
No Opinion	4	36.4%
Not enough information to form an opinion	3	27.3%

18c. Please elaborate on your responses above, or provide suggestions for Phase 2.

With more public access should come more trail user surveys perhaps.

This research question has been addressed and we likely do not need additional research on this in Phase 2.

Unsure how visitor/public desires have been investigated.

19. Any Additional Comments

I worked on Phase I habitat mapping of the project area - it would be great to know how these data are being utilized and if there will be further habitat mapping. I also think there are opportunities during Phase II to study the creation and management of upland transitional habitats (A8, Inner Bair, perhaps A17) to inform work in them. Keep up the good work Laura!

Continued quality monitoring of migratory birds is an obligation of the restoration program. This is not being done.